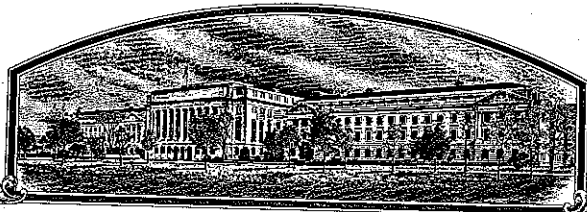


No.



9500286

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Asgrow Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'A5545'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of December in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

Marska A. Stankovic

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Wm. H. Clifton

Secretary of Agriculture

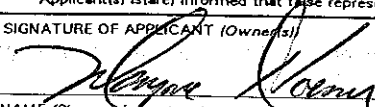
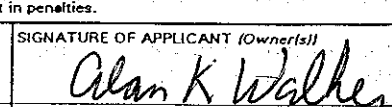
U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

| | | | | | |
|---|--|---|--|--|---------|
| 1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER | | 3. VARIETY NAME | |
| Asgrow Seed Company | | XP5538 | | A5545 | |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) | | 5. TELEPHONE (include area code) | | FOR OFFICIAL USE ONLY PVPO NUMBER 9500286 DATE Aug. 31, 1995 FILING AND EXAMINATION FEE 2450.00 DATE Aug. 14, 1995 CERTIFICATION FEE 300.00 DATE Dec. 6, 1996 | |
| 2605 E. Kilgore Road Kalamazoo, MI 49002 | | (616) 384-5548 | | | |
| 6. FAX (include area code) | | 7. GENUS AND SPECIES NAME | | | |
| (616) 384-5652 | | Glycine Max | | 8. FAMILY NAME (Botanical) | |
| | | | | Leguminose | |
| 9. CROP KIND NAME (Common name) | | 10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) | | | |
| Soybean | | Corporation | | | |
| 11. IF INCORPORATED, GIVE STATE OF INCORPORATION | | 12. DATE OF INCORPORATION | | | |
| Delaware | | March 22, 1968 | | | |
| 13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS | | | | 14. TELEPHONE (include area code) | |
| Wayne L. Hoener Asgrow Seed Company 7089-248-24 2605 E. Kilgore Road Kalamazoo, MI 49002 | | | | (608) 755-1777 | |
| Dr. Alan Walker Asgrow Seed Company 5926 E US HWY 14 Janesville, WI 53546 | | | | 15. FAX (include area code) | |
| 16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) | | | | | |
| a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO) | | | | | |
| 17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act?) | | | | | |
| <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20) | | | | | |
| 18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? | | | 19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? | | |
| <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | | <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED | | |
| 20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? | | | | | |
| <input type="checkbox"/> YES (If "yes," give names of countries and dates) <input checked="" type="checkbox"/> NO | | | | | |
| 21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. | | | | | |
| The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. | | | | | |
| Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties. | | | | | |
| SIGNATURE OF APPLICANT (Owner(s)) | | | SIGNATURE OF APPLICANT (Owner(s)) | | |
|  | | |  | | |
| NAME (Please print or type) | | | NAME (Please print or type) | | |
| Wayne L. Hoener | | | Alan K. Walker | | |
| CAPACITY OR TITLE | | DATE | CAPACITY OR TITLE | | DATE |
| Soybean Product Manager | | 8/6/95 | Director of Soybean Research | | 8-25-95 |

Asgrow Seed Company
PVP Application A5545 Soybean
August, 1994

EXHIBIT A
ORIGIN AND BREEDING HISTORY OF A5545

- 1988 Cross was made near Isabela, P.R.
Parentage: A5403//A3205/W20
- 1988-89 F1 and F2 generation grown near Isabela, Puerto Rico.
(Winter)
- 1989 F3 generation grown at Queenstown, Md. 100 plants were selected, thrashed individually and sent to Puerto Rico for increase.
- 1990 The experimental line was given the designation JP88290 Q89-21083C and was yield tested at 3 locations.

It was in October 1990 that JP88290 Q89-21083C was determined to be a stable and unique line.
- 1991 JP88290 Q89-21083C was entered in an advanced yield trial and grown at 10 locations in 5 states. It was selected for its yield, disease tolerance and maturity. It was given the designation XR5538.
- 1992 XR5538 was yield tested at 12 different locations in 7 states and was selected for its yield, appearance, disease tolerance and maturity. 2 units of breeder seed were sent to Puerto Rico for increase. XR5538 was given the designation XP5538. The breeder seed lot was tested for the presence of the Als gene which gives tolerance to certain sulfonylurea chemicals and was found to be homozygous for the gene.
- 1993 XP5538 was grown in 1 advanced yield trial in 6 states and was selected.
Basic seed was produced at Matthews, Missouri.
XP5538 was nominated for release and assigned the designation A5545.

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Asgrow Seed Company
PVP Application A5545 Soybean
August, 1994

EXHIBIT B

NOVELTY STATEMENT CONCERNING A5545

To our knowledge, the soybean varieties that closely resemble A5545 are A5403 and Hutcheson. Characteristics which differentiate A5545 include but are not limited to:

| | | |
|---------------------|-----------|-------|
| 1) Seed Coat Luster | A5545 | Shiny |
| | A5403 | Dull |
| | Hutcheson | Dull |

| | | |
|------------------|--------|---------|
| 2) Cyst Reaction | Race 3 | Race 14 |
| A5545 | R | S |
| Hutcheson | S | S |
| A5403 | R | R |

| | |
|---------------------------|-----|
| 3) Tolerance to Synchrony | |
| A5545 | Yes |
| Hutcheson | No |
| A5403 | No |

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

| | | |
|--|---------------------------------|---|
| NAME OF APPLICANT(S) Asgrow Seed Company | TEMPORARY DESIGNATION XP5538 | VARIETY NAME A5545 |
| ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 9638-190-23 Gull Road Bldg. 190 Kalamazoo, Mich. 49001 | | FOR OFFICIAL USE ONLY PVPO NUMBER 9500286 |

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☐ 31 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 31 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

☐ 1

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

☐ 1

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

☐ 11 = Determinate ('Gnome'; 'Braxton')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

2 = Semi-Determinate ('Will')

★ 18. MATURITY GROUP:

☐ 0 ☐ 81 = 000
9 = VI2 = 00
10 = VII3 = 0
11 = VIII4 = I
12 = IX5 = II
13 = X

6 = III

7 = IV

8 = V

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☐ 0Bacterial Blight (*Pseudomonas glycinea*)

★

☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)

★

☐ 0

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microsphaera diffusa*)

★

☐ 0Brown Stem Rot (*Cephalosporium gregatum*)☐ 2Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

9500286

FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojæ*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojæ*)
- ★ ☐ 1 Race 1 ☐ 1 Race 2 ☐ 1 Race 3 ☐ 1 Race 4 ☐ 1 Race 5 ☐ 0 Race 6 ☐ 1 Race 7
- ☐ 1 Race 8 ☐ 1 Race 9 ☐ Other (Specify) _____

VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 0 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 1 Race 1 ☐ 0 Race 2 ☐ 2 Race 3 ☐ 0 Race 4 ☐ 1 Other (Specify) Race 14
- ☐ 0 Lance Nematode (*Hoplaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 0 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|-------------|-----------------|-----------------------|-----------------|
| Plant Shape | A5403 | Seed Coat Luster | A5403 |
| Leaf Shape | A5403 | Seed Size | A5403 |
| Leaf Color | Essex | Seed Shape | A5403 |
| Leaf Size | Hutcheson | Seedling Pigmentation | A5403 |

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

| VARIETY | NO. OF DAYS MATURITY | PLANT LODGING SCORE | CM PLANT HEIGHT | LEAFLET SIZE | | SEED CONTENT | | SEED SIZE G/100 SEEDS | NO. SEEDS/POD |
|---------|----------------------|---------------------|-----------------|--------------|-----------|--------------|-------|-----------------------|---------------|
| | | | | CM Width | CM Length | % Protein | % Oil | | |
| A5545 | 156 | 2.0 | 90 | 9 | 15 | 41.5 | 20.3 | 15 | |
| A5403 | 155 | 2.1 | 92 | 6 | 11 | 41.8 | 19.8 | 14 | |

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.J. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Asgrow Seed Company
PVP Application A5545 Soybean
August, 1994

EXHIBIT D
ADDITIONAL DESCRIPTION OF THE VARIETY

A5545 is a mid group V soybean variety which matures about 1 day later than A5403. A5545 has resistance to soybean cyst nematode race 3. A5545 is a determinate plant type with purple flowers, gray pubescence, tan pod walls and shiny seed with imperfect black hila. A5545 also has tolerance to certain sulfonylurea herbicides.

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Asgrow Seed Company
PVP Application A5545 Soybean
August, 1994

EXHIBIT E

STATEMENT OF BASIS OF APPLICANT OWNERSHIP

A5545 was originated and developed by Bill Rhodes, an Asgrow plant breeder. By agreement with Asgrow Seed Company, all rights to any invention, discovery or development made by employees are assigned to the company. No rights of such invention, discovery or development are returned by the employee.

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